

Application No.: 10/566,631

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AMENDMENTS TO THE DRAWINGS:

Figs. 5-7 have been added to show an embodiment of the present disclosure.

Fig. 5 is an illustration of a spherical core with a lens and a film cover.

Fig. 6 is an illustration of a spherical core.

Fig. 7 is an illustration of the spherical shell.

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REMARKS

I. Introduction

In response to the Office Action dated November 16, 2007, Applicants have amended claims 3 and 4 to further clarify the present invention and to overcome the § 112 rejections. New claim 5 has been added. In addition, Figs. 5-7 are added. Care has been taken to avoid the introduction of new matter.

In response to the pending Office Action, Applicants respectfully submit that all pending claims are patentable over the cited prior art for the reasons set forth below.

II. The Rejection Of Claims 1-4 Under 35 U.S.C. § 103

Claims 1 and 2 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hutchins et al. (USP No. 2,943,358) in view of Robinson (USP No. 2,849,713); and claims 3 and 4 as being unpatentable over Hutchins in view of Robinson and further in view of Grenell (USP No. 6,215,453). Applicants respectfully traverse these rejections for at least the following reasons.

Amended claim 1 recites, in-part, a luneberg lens comprising: a lens which is configured by combining lens parts of spherical core and spherical shell-like resin foams, wherein the lens is sealed by a synthetic resin film which is formed along a surface of the lens and in which a thickness is 100µm or less and of which own relative dielectric constant is higher than a relative dielectric constant of the outermost layer of the lens.

Similarly, amended claim 3 recites an antenna apparatus in which a reflecting plate and the luneberg lens are sealed by a synthetic resin film formed along a surface of the luneberg lens.

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The Office Action asserts that Hutchins discloses a luneberg lens including a spherical core and spherical shell, where the lens is sealed by a synthetic resin film that is formed along a surface of the lens and has a relative dielectric constant higher than a relative dielectric constant of the outermost layer of the lens.

However, Hutchins describes covering the *cover* of the lens with two layers of polyester plastic to seal the lens from moisture, not forming a seal on the *surface* of the lens. As such, Hutchins fails to disclose or suggest, at a minimum, "...the lens is sealed by a synthetic resin film which is **formed along a surface of the lens**," as recited in claims 1 and 3. Further, Hutchins is *silent* regarding the relative dielectric constant of the polyester plastic used to seal the lens. Moreover, Robinson fails to remedy this deficiency.

In addition, the Office Action acknowledges that Hutchins does not disclose that a thickness of the polyester plastic is 100 μm or less. The Office Action asserts that it would have been a matter of design choice to select the thickness of the sealed layer to seal the lens. However, when the thickness of a film exceeds 100 μm , the electronic performance is deleteriously affected. Accordingly, this feature is not a matter of design choice, but rather, a feature having beneficial effect upon the performance of one embodiment of the present disclosure.

The Office Action acknowledges that Hutchins does not disclose the shell-like resin foam. However, the Office Action relies on Robinson in an attempt to cure this deficiency of Hutchins. It is alleged that it would have been obvious to include the shell-like resin foam of Robinson in the luneberg lens of Hutchins to reduce the thickness of the luneberg lens.

However, Robinson fails to disclose or suggest, "...the lens is sealed by a synthetic resin film which is **formed along a surface of the lens**," as recited in claim 1. Therefore, Robinson

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does not cure the deficiencies of Hutchins. Neither Hutchins nor Robinson, individually or combined, disclose or suggest, "...the lens is sealed by a synthetic resin film which is **formed along a surface of the lens,**" as recited in claim 1.

Moreover, Grenell too is silent regarding sealing the lens with a synthetic resin film that is formed along a surface of the reflecting plate and lens. As indicated above, Hutchins and Robinson also fail to disclose this limitation of claim 3. As such, Applicants submit that none of the references, individually or combined, disclose or suggest that the reflecting plate and the lunberg lens are sealed by a **synthetic resin film formed along a surface of the lunberg lens,** as required by amended claim 3.

It is well known that in order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA1974). As Hutchins and Robinson fail to disclose a lunberg lens comprising a lens which is configured by combining lens parts of spherical core and spherical shell-like resin foams, wherein the reflecting plate and the lens is sealed by a synthetic resin film which is formed along a surface of the lens and in which a thickness is 100µm or less, it is submitted that Hutchins and Robinson, alone or in combination, do not render claims 1, 3, or any pending claims dependent thereon, obvious.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1 and 3 are patentable for the

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reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

IV. Conclusion

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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